

This is a documentation of Xenia damage done on Friday afternoon. Steve and Dr. Mehta arrived in Xenia at about 3:30 p.m. and after going through all the roadblocks we managed to be able to go through the city at about 4:30. Our first impression of the damage is that the tornado went through the right of the middle part of town including the business district and has created a tremendous amount of damage, a large number of structures are unsafe to enter and we will have to try and document the best we can. We have been unable to obtain written passes from City Hall or from the National Guard, but as long as we ~~will be able to~~ can come in here we will be able to document in the city. Photograph #1 is of the street ~~where~~ where Green County Building is located, the structure across the street from it apparently had a load-bearing roof, a load-bearing wall with concrete blocks and brick veneer. The walls seemed to have fallen out and the roof has collapsed. Looking at the roof and the finishing of the roof it gives the impression that there was a second floor on the building. However by the debris ~~all~~ around it it is not possible to judge whether there was a ~~second~~ second floor or not. Photo #2 is showing the collapsed load-bearing wall of the structure which was opposite the Green County Building. The items inside the structure show that it was a grocery store and the ~~the~~ debris of the wall that had collapsed outside can be seen clearly in the foreground in the picture. The ~~structure~~ structure does not seem to have or there is no vertical reinforcement ~~either~~ <sup>neither</sup> can I ~~can~~ see any horizontal reinforcement in the block wall. Apparently there were no in the structure. The roof or the floor of this structure was made with 1 x 12 spaced approximately 12 to 16 in. apart with a continuous floor or roof on the top and a ceiling material at the bottom.

Photo #3 is of the main street Route 68 North looking north on the street.



A large number of structures particularly the roofing has been damaged on this building and on the east of the street there was apparently a park where a large number of trees were damaged. It may be the school located <sup>couple</sup> ~~several~~ there for there are a ~~large number~~ of school buses being towed away. right now.

Picture #4 is taken from the main street looking south where the court house with the clock can be seen on the left side and on the right side a little further down is the general business district with shops and commercial buildings. Here, it seems like that perhaps as many as 50% of the buildings were damaged of one type or the other.

Picture #5 is of the city <sup>hall</sup> of Xenia where apparently there was no structural damage to the building but 80% of the windows were broken. It is not possible to determine whether the windows were broken because of gravel ~~or~~ or because of the winds. The city Hall structure is made of , at least the outside of concrete cast block. And it must be internally reinforced concrete structure built in 1938.

Picture #6 is apparently of the county courthouse or municipal courthouse where the building seems to have sustained no structural damage. It is a three, no four story building; the roofing and ~~siding~~ some of the tiles are missing. the tower structure which is 5 story high ~~is~~ has not sustained any damage except the ~~XXXX~~ glass in the face of the clock is gone and the weathervane on the top has been bent, towards <sup>the</sup> northeast indicating that the wind in this area was coming from the southwest. On the courthouse building, again, 50 to 60 percent of the glasses are broken. One in the door is broken and the other is broken in the window. We are going to check whether the glasses are broken because of the gravel or not. We are unable to inspect the front side of the windows whether they broke because of the roof gravel or not. However, on entering the building we found that the number of windows some where between ~~10~~<sup>10</sup> and 30 percent of the windows on the leeward side of the structure were also broken. with pieces of roofing material inside the building indicating perhaps the roofing material in the turbulence of the wind some roofing materials flying around could also enter the building <sup>from</sup> ~~on~~ the leeward side.



The roofing material vary in size from  $\frac{1}{2}$  one inch square to as much as 100 sq. in. in area. In one of the offices on the third floor, which was facing southwest meaning that the tornado came directly at it, there were two windows knocked out ~~out~~ of three windows. and all the glass and other debris, including venetian blinds and so on have come inward indicating that the glass ~~blow~~ blew inside. There is a piece of wood  $\frac{1}{2}$  inch by  $\frac{1}{2}$  inch, and 14 inches long. There are two or three pieces of wood like that that may have come in from the old window or flying around in the debris. However there is not much of concentrated gravel shown here. There are 3 or 4 pieces that could be broken roof tile and that may have caused the initiation of the failure. The roof tile is about  $\frac{1}{2}$  inch thick--old type tile--and 1 sq. in. in area. The glass thickness is about  $\frac{3}{8}$  and 4 ft. wide and 4 and  $\frac{1}{2}$  ft. in height. Single strength glass according to Steve.

Photo #7 is of the over turned pay telephone where there are 4 pay telephones anchored ~~in~~ in two separate concrete slabs. and they have simply overturned by the force of the wind. The phone booths are approximately 2 and  $\frac{1}{2}$  ft. wide, and 6 ft. high. They are located close to each other so the total distance from outside one phone booth to the outside of the other phone booth is probably somewhere between 10 and 11 ft. The phone booths were anchored in a concrete slab which has an average thickness of 2 and  $\frac{1}{2}$  inches to 3 inches., and the slab are 3 and  $\frac{1}{2}$  ft. wide. So it may be possible by using simple numbers on this to determine the minimum wind velocity necessary to overturn the phone booth. It should be noted that the ~~phone~~ phone booths were not anchored any further than the weight of the concrete slab and the bottom of the concrete slab is nothing else but loose gravel with ~~no~~ virtually no cement on it. So about 2  $\frac{1}{2}$  to the maximum of 3 in. of average concrete is all that was added<sup>ed</sup> to the weight of the overall booth system.



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Photo #8 is of the municipal court. The front part of it showing a number of windows which are boarded up and the clock face is gone and yet the p i n front of it is still standing straight. There again it is not possible to determine the size of of but it does give some ~~of~~ idea of the not extremely high intensity of the wind that may have occurred in ~~this~~ this area particularly all the light standards, the street light standards are ~~xxx~~ turned or have slight damage but none of them have been ~~damaged~~ <sup>bent</sup> to any large extent. The top portion which holds the light in couple of them. They have been bent. Might be added for the municipal court building ~~that~~ <sup>though</sup> even ~~the~~ the clock face is gone the clock seems to be working.

Photo #9 is of an old office building located at the corner of US 35 and US 68. The streets are at the corner of Detroit and Main. This building has not sustained <sup>ed</sup> any major structural damage except the roofing on the windward side is fairly heavily damaged and also the roofing on the leeward side which was in Photo #3 or #4 shows that there was quite a bit of roofing taken out. Approximately 50% of the window panes are broken ~~x~~ on the windward side with about the same number broken at the ground floor level as at any other level.

Photo #10 is taken of a building on Main St. on US 35 where all other structure around the building are damaged near the rooftop, well one structure in the middle which apparently was <sup>formerly</sup> a new building has collapsed ~~xxx~~ ~~xxxx~~ from what can be judged from a distance, the building had load bearing walls on the two sides and the front part of the building may have been glass and I see a steel beam perhaps going across which apparently came off or could have come off the roof and collapsed the total structure. The roofing of the building was supported on steel which were supported on the



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load bearing walls on two sides.

Photo #11 of the old hotel, 3 ~~xxxx~~ story hotel, which was load bearing where the windward ~~xxxx~~ 3rd story was seem to have collapsed and the roof has collapsed in that corner. The picture is taked of the windward ~~wxx~~ wall side. The remaining structure seems to be all right except the roofing and the parapet ? around it. All structures around have sustained damges primarily in the roof area. All the top story area.

Photo ~~x~~12 and ~~x~~13 are of the trailer trucks which were upended, crunched, and one of them ended on top of the structure. Now <sup>these</sup> ~~this~~ trailer trucks are apparently empty and they were parked perhaps across the street approximately 100 ft. away. The cab part was not joined when the trucks were moved and the best that can be judged is that one trailer truck or two trailer trucks ended up on the roof. Now the structure on which the trailer trucks are parked, was probably of some type of shop. It can not be determined at this stage. The structure was a load bearing walls of masonry block and brick veneer. The wall perhaps collapsed and when the wall collapsed the trucks tumbling over could conceivably end up on top of the structure. The trailer trucks have a few pieces of wood coming thru it. The dimensions of the truck are about 8 ft wide and 40 ft long. There are two trailers which have ended up or parked on the roof. One of them partially and another one all the way to the middle of the roof.

Photo 14 and 15 is looking toward the ~~xxxx~~ Kroehler Furniture Store which is located across the street of the bowling alley on which three ~~wx~~ semi-trailers ended up. Photo 16, 17, and 18 are showing the semi-trailers: one on the ground totally torn apart; one partly on the ground partly on the roof structure, the collapsed roof; and the 3rd semi-trailer which is in the middle of the roof. which is twisted and ~~xxxx~~



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torn apart and somehow has tumbled over to the top.

Xenia Documentation on April 6th. Saturday Morning

The first part of the documentation was flying over Xenia ? and the surrounding area to photograph and look at the damage. The flying consisted of starting from the southwest of Xenia approximately 2 and 1/2 3 miles from downtown Xenia and looking at scattered damaged in a very lightly populated area and photographing that. The plane was moving towards Northeast and the pictures were taken from the right side of the plane. The damage in the Southwest of Xenia or outside the city of Xenia was rather scattered but as soon as the ~~houses~~ houses in the southwest part of Xenia were seen or in the path of the tornado, it gave an impression of total destruction.. Our flight path took us flying just to the left of the tornado path going northeast and we continued that all the way until we reached Central State Univ. At the Central State Univ. we took one clock ~~wise~~wise turn around or circle photographing that area and headed back towards Xenia flying Southwest. One of the things we noticed in the Central State Univ. area was that some of the trees were uprooted and they were facing south. west. or west indicating that they were in the path on the back side of the tornado. When we came back on the northeast part of Xenia we took clockwise circles over schools which are located northeast of Xenia or northeast part of Xenia as well as we took circles over the downtown, All the circles we took in the plane were ~~clockwise~~clockwise. We tried to photograph the downtown, ~~the~~ the schools, and the area where the railroad cars were blown off. However, by the time we took the pictures when we were airborne, the cars were cleared. Most of the debris <sup>pattern</sup> that we were able to observe in <sup>the</sup> city of Xenia gave an impression that everything was moving towards the northeast. Actually we were not able to find any definite evidence that was leaning towards southwest. However in the northeast part of Xenia or outside the city



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of Xenia and in the Southwest before the tornado entered the city of Xenia There was some evidence where the trees were uprooted on the left side of the tornado or left side of the damage path and they were uprooted in the direction of the southwest. indicating that they were probably in the bad part of the tornado. In the downtown area, we also took some pictures of Kroehler's Furniture Shop Kroehler's Manufacturing Co. where the trailers truck trailers were blown on the bowling alley across the street. We also took some pictures of the storage silo and the damage path seems to have gone just to the west of the storage silo and there does not seem to be any damage except perhaps some conveyor belts. But all the leads on the storage silo were in place. During our flight we tried to see and locate any ground marks and we were not able to find any definite ground marks of the tornado. In the beginning of the tornado or southwest outside the city of Xenia, we have taken some pictures of what looks like ground marks. But the ground marks are kind of straight and there is no indication of or no guarantee that they may have been made because of a tornado. We have also obtained from our flight some pictures of the transmission towers that were blown down. There were two of them that have collapsed by the time we took the pictures the transmission lines had been cut off and the towers had been ~~xxxxx~~ moved around a little bit. The remaining towers on both sides of the collapsed towers are in good condition and standing. This is the documentation from the ground.

Photo X-19 is of a residence located on the southwest part of Xenia . It is on the left of ~~xxxx~~ tornado path. The photograph is taken looking southeast showing one of the few areas damaged and the siding seems to have been pushed in at that point. as well as the TV antennae is leaning towards east, northeast. The house is located on Iowa St. and just to the east of Wyahot St. Walking across ~~xxxxx~~ , along Ottawa St. going towards the east, the damage is slowly



crazy and yet it is relatively scattered damage. Most of the things have blown over north or northeast. More debris going towards the north ?  
 Number of windows broken facing south , roofing or the east damaged, one airstream travel trailer was picked up banged against a house and the damages continue to increase as we move more and more towards the east.

Photo X-20 is of two houses at the corner of Pueblo Dr. and Ottawa Dr. These two houses have lost most of the roof and the windward walls. The picture #X 21 is also of the same area showing further north towards Pueblo St.

where two houses <sup>were</sup> very severely damaged . Huge ~~big~~ pile of debris in <sup>front</sup> ~~front~~ of the houses. Relatively small houses where the exterior walls have collapsed, top portion of the exterior walls ~~was~~ and however the central part of the house seems to be standing. Looking further on Pueblo Dr. towards the north, there are two ?

Photo 22 taken at the corner of Navajo and Pueblo Dr. shows a light <sup>standard pole</sup> ~~kind of~~ pole which is very similar to a telephone pole where the top ~~six~~ eight to nine feet of it was broken off and landed directly underneath the pole.

Photo X23 shows where veneer brick had ? from the house where the house has lost part of the roof. (at the southwest) The house is located at the corner of Pueblo and Navajo Dr.

Photo X24 taken at the corner of Pueblo Dr. and the next street east from Navajo showing demolished and a ~~xxx~~ large amount of ~~xx~~ pile of debris.

X 25 shows another house at the corner of Pueblo Dr. and one street east of Navajo, again showing a demolished house and pile of debris. In this particular house apparently the eastern portion of the house is still standing and some other ~~o~~ inside walls are still standing.

Picture 26 is wide angle shot showing two schools in this area, the small square school and the large school with major damage in one part of the structure.



The wide angle shot shows the amount of debris that has collected around the school.

Picture 27 shows street across the school. It is the Pueblo Dr. area looking south showing the amt. of debris that has been collected because of the broken and torn houses in the area. Also it is worth noting that picture 27 one of the telephone pole lines is broken in the top 8 ft. and <sup>5</sup> ~~is~~ lying approximately 18 ft. away from the ~~poxxix~~ snapped pole. The houses in this area, some of them are totally destroyed and a large number of trusses and two by fours and all the junk coming out of the house has been damaged.

Picture X28 is of a ? that was buried in the ground approximately 12 inches. This piece of joist? which was a broken end of a joist must have come from one of the houses which are located on the south and west of this <sup>this</sup> area of particular place. The joist was buried as if it had come down towards the southwest instead of coming in the back of the tornado. There are a number of missiles in this area also buried in the same direction and they have been buried about 5 or 6 inches. There is a large amount of broken trusses and two by fours ~~xx~~ lying in this area.

Picture X 29 is inside Arrowhead Elem. School. The layout of the school is classrooms on the perimeter. It is approximately a square school perhaps 250 ft. by 250 ft. in area. Inside the classrooms there are hallways and the hallways running east/west have openings to the exterior. The picture shows one of these hallways which has an opening to the exterior. The two double doors and all the wiring for this class is damaged and broken. The glass perhaps could have been broken by two by four pieces of anywhere from one ft. to three ft. length ~~xxx~~ which are approximately or which have entered 10, 12 say maybe 15 ft. from the doorway. One of the observations could be that no person should be allowed to take shelter perhaps maybe up to anywhere further than 15 ft. from external doorway which has a glass. Now the remaining of the hallways have debris from acoustic ceiling and ~~x~~ some of the framing of the



acoustic ceiling. However there is nothing in the hallway which indicates that there is, there would have been any danger to any person taking shelter. the debris ~~xx~~ in the hallway is generally more where there is a doorway to the classroom and right next to the door there are glass on the top and glass on the side. The <sup>side</sup> glass being about one and a half <sup>ft.</sup> by 5 ft, 6ft high, wire enforced. This glass had been perforated or penetrated broken and it would have to have occurred with some missiles coming into it. So even with the interior wall of the classroom, there have been enough debris generated from the classroom which has struck the glass and broken the wire enforced glass.

Picture X-30 shows the hallway which has sustained relatively very little damage except the water damage from the roof. The acoustic ceiling panels, maybe about 20% of them fallen down because of the wind whipping around it. and some debris coming through the classroom door. There is one piece of wood, piece of two by four, broken into about only one inch square, approximately 3 ft. long. that has entered into the classroom.

Picture ~~xx~~ 31 shows another interior hallway. This particular hallway did not have any external door except the door leading to the classroom and there is very little ~~debris~~ debris ~~has~~ come in this particular case even into the classroom. The particular structure, the interior wall or the exterior of the hallway and interior of the classroom is not load bearing concrete masonry block wall with the finished tile on the outside. The overall structure is made of, the interior overall structure is made of steel columns, approximately 15 ft. apart and a beam, an inclined beam, going toward the center making a ~~xx~~ major span of perhaps 100 to 220 ft. Now the inside structure <sup>is</sup> ~~of~~ the gymnasium cafeteria, stage area and so on. In all the essential load verticle load that is carried by the steel structure. The exterior walls are of concrete masonry block walls with the roof being of a joist going from the exterior walls to the steel beam. The exterior walls also have a brick veneer ~~xx~~ <sup>ce</sup> on the outside. This block walls do not seem to have sustained any damage. There is no sign of



any barn? beam take it back, the exterior also <sup>has</sup> ~~has~~ a framing system with a concrete column and concrete beam between the column and the steel <sup>joist</sup> ~~joist~~ are resting on the concrete beam and the steel beam in the interior thus all the load bearing members are engineered concrete and steel members and the block walls are partitioned walls. The building does not seem to have sustained any structural damage except it has lost some roofing in the corners and the roofing is not quite ? but a chlorophorm type of steel placed on steel <sup>joists</sup> ~~joists~~. and some of it when the wind entered the building or at the corner when the high uplift has created peeling of the roofing. This peeling of the roofing has created a tremendous amount of damage to the property or the materials ~~x~~ stored inside the classroom. All the chairs damaged, the rain has come in, the glasses are ~~ex~~ ~~broken~~ broken, and it almost looks like a total disaster. At the same time structurally the building seems to be perfectly sound with a perfectly good shelter area in the hallway if the students would take and stay away from the doorway 15 ft from the external doorways and away from the interior doorways coming from the classroom.

X-32 and 33 is of two by eight missile found in the eastern classroom of Arrowhead School. The missile is two inch by eight inch by approximately 14 feet. which must have come ~~either~~ through the roof where some of the roofing was taken up or through one of the windows where the glasses are all broken and totally lost.

X 34 northeast corner of the Arrowhead School. Some of the roofing was lost at the northeast corner of the school. We are looking southwest at the school.

X 35 shows southwest corner of the Arrowhead High School where some of the roofing material was picked up and one of the <sup>joists</sup> ~~joists~~ which was picked up is also visible. X 35 is of the southwest corner of the school looking northwest village ? where the <sup>joist</sup> ~~joist~~ was picked up. It is pretty clear the

X 36? →



Joist was ~~x~~ apparently going from one steel beam to another at a corner and it seems to have been picked up. None of the ~~joists~~ <sup>joists</sup> that were resting on the outside concrete beam and apparently they seem to be connected to concrete beam, seem to have been picked up. In front of the picture in the foreground in X 35 is a utility pole that is approximately 20 ft. long. and that must have ~~xxxxxx~~ traveled somewhere from the southwest direction. The telephone pole has traveled in a north-northeast direction 161 ft. from the point where it was snapped off. The snapped part of the pole is 25 ft 6 inches long. Its diameter at the base where it has snapped off ~~is~~ is approximately 10 inches.

Picture 37 is of the stub of the utility pole that was remaining in the ground. X 38 is taken on the south side of Arrowhead <sup>school</sup> at the southeast corner primarily showing the debris that has collected. This debris came from the houses which are approximately 200 ft. away in the south and southeast direction. And the debris is approximately ~~two to two and one half~~ <sup>two to two and one half</sup> ft. thick at this corner.

X-39 is of a general area taken from Arrowhead School looking towards downtown in the direction of the tornado path. It shows large amount of debris, the stripped ~~xx~~ trees and in general just the trash. The Arrowhead School dimensions which were given earlier could now more properly be changed to column spacing of 14 ft. with 12 trout? trowel? base of column or then 68 ft. by 168 ft.

X-40 is the photo of the junior high school looking north. The picture is taken of the south side of the high school where there is a very severe damage at the east ~~xxx~~ end of the school and relatively little damage at the west end. All the pieces of two by fours and particularly the pieces of ~~joist~~ <sup>joist</sup> of the houses are oriented in a northeast-southwest direction. Majority of them are in that direction. The school that we just took the picture of is West Junior High School. Some of the pieces of wood found on the ground



between West Junior High and Arrowhead School primarily are in the direction of northeast and southwest. Must have come from the houses that are located southeast of ~~xx~~ here approximately 600 ~~to~~ 700 ft. Some houses located in the northeast and east direction from these grounds are also heavily damaged and it is conceivable that some of these members may have come from there. We found some ~~joist~~ of the house the ~~joist~~ being approximately

? ~~joist~~ and it is approximately 25 ft and they are whole and they have come, they must have come from the houses destroyed which are due east from here or actually the houses are southeast from here. We have also found on these grounds one piece of ~~xx~~ 3 and one half by 13 inches by 20 ft. long finished

? 20% of the volume and this ~~xxxxxx~~ also must have come from the southeast direction from one of the houses which is approximately 180 ft. away.

X41 is the picture of wooden beam 3 and one half inches by 13 inches by 20 ft. long. The picture is taken looking southeast probably the direction from which this beam came. The telephone poles in the background are leaning toward northeast. The beam must have come from one of the houses, some of them are virtually destroyed, totally destroyed, <sup>though the</sup> ~~the~~ majority of the houses do have some interior walls standing which would promote the area or the concept of the interior room being the safer room. The beam that we found between the schools, 3 by 12 inches, 20 ft. long, 13 in. wide by 20 ft.

long actually came <sup>from</sup> ~~from~~ the gymnasium area of the west junior high and the beam has traveled directly southeast direction 460 ft. the best estimate we can come up with. The west junior high with the round roof or a barrel roof has lost a large number of its beams and this is the only one we have found which is that far away. Some other beams are lying just next to the school, just east of the structure and there is a large amount of ~~a~~ debris collected on the east part or the east face of the structure. We are in the Warner



junior high, which we have been calling West ~~Junior~~ Junior High. The structure has three major sections, two sections are classrooms and laboratory with a number of interior hallways where the classrooms are along the perimeter as well as on the interior. This hallways seem to have survived very ~~xxx~~ well. A part of the structure, the western part of the structure apparently did not see ~~f~~ very much of the fury of the tornado. because none of the wire reinforced doors have been broken and there are no missiles. On the southwest side or more on the west side in the southwest corner of the building there are a number <sup>f</sup> of windows but this part of the structure has not sustained any ~~damage~~ damage. Apparently there has been some roofing peeled off on the top and the water has seeped through the structure and has spoiled and damaged some of the acoustic ceiling panels. But in general, there is virtually no damage or no problem as far as ~~the~~ interior hallways are concerned. The main part of the building has sustained damage which is in the direction of north and northwest and in this case the classroom windows have been broken and the wind has gotten into (and rain) has gotten to the structure and ~~xx~~ has peeled off some roofing material causing leakage of the roofing. The water has come inside and the winds have played havoc with the interior materials. Wherever the ~~xxx~~ hallways either had one wall exterior or the hallways ended into an exterior, <sup>through the doors</sup> to the exterior, there has been some damage: the glass windows wherever they have broken due to missiles or other things, there is a fair amount of debris in the hallways. But the hallways which are in the interior with no outside windows there has been no damage or any major <sup>m</sup> amount of debris.

Photo 42 is of the collapsed wall on the west side of the gymnasium. This ~~xxxx~~ wall is made of concrete masonry block 8 in. by 8 in. by 16 ins. with brick veneer on the outside. The wall is not anchored to the base and between the two major walls on the side apparently there was an expansion joint.

There is no sign of a pilaster or any verticle reinforcement in this wall,



The wall will be approximately 16 ft high and about 50 ft wide standing free with ~~vertical~~ very little connection at the end walls and part of it seems to finished so probably there was no connection ~~a~~ at all. The collapsed mechanism is possible since this west wall has fallen inward if the wind coming from the west would blow the wall inside. Once this wall collapses the interior becomes filled with the wind and combined with the uplift of the roof as well as the interior winds has taken off half of the south part of the roof and has collapsed the wall in the last arch the three ? arch on the east side of the structure outward. In other words the overall failure mechanism here seems to indicate that the winds came from the west. Now it is worth noting that some of, or one of the beams that we found coming from this structure went approximately 460 ft in southeast direction. The structure is a total failure. Its primary construction of the roof is a three-keist ? arch. The hinges at each end with a steel ~~ix~~ plate are connected to a concrete footing and at the center is also connected with a steel plate. The arch are laminated ~~wooden~~ ~~xxx~~ wooden, at Warner Jr. High 6 ins. wide and approximately 2 and one half ft. thick. There has ? with a steel plate and steel beams and a hinge in the center. The arches have wooden beam ~~12x12~~ 3 in by 13 in by 20 ft long and the top of the beams are 2 and one half in. thick. with wooden planks to make the roofing. The wooden beams ~~was~~ which are 13 in. high are placed between the arches on metal or steel saddle? and the plank on the top of it was very likely nailed to the joist. The interior walls of the structure, some of them have been ~~damaged~~ damaged and on one part where they apparently had kitchen facilities to serve the cafeteria, seems to have survived pretty well. This kitchen facility is located on the north side of the structure. Most of the roof lost is on the south side. The wall lost is on the west side and one of the end ~~arched~~ arches lost is on the east side.

Xenia 2  
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Photo 43, 44, and 45 are taken with wide angle lenses of the <sup>mn</sup>gymnasium/cafeteria area at Warner Jr. High School from the east side looking west, where a gaping hole in the background is where the western ~~wll~~ wall collapsed inward and the arch which have collapsed outward on the east side can be seen in the foreground. The interior has sustained a tremendous damage as can be seen in the pictures.

Picture 46 is of the utility pole which was broken and <sup>15</sup>~~dis~~connected with a wire to another utility pole and hence has not gone very far from its stud. The <sup>d</sup>stub ? can be seen in the background with a something sticking out-- something has been place in the stub.

47? ←

Picture 47 showing the houses at the corner of and PAWNEE Dr. where this area apparently and there is a tremendous amount of destruction. Most of the houses, not all of them have some interior walls standing. ( or some walls standing). The stop sign in the foreground of the picture is bent towards the northeast. Picture 47 taken at the corner of Arrowhead Trail and <sup>PAWNEE</sup>~~Pointed~~ dr. showing a house which lost its roof right next to it and yet some of the interior walls were still standing. This area has seen a very serious tornado damage and large number of relatively small houses have been damaged or destroyed.

Photo 48 is taken primarily to show ?

2.

. This has been typical of this area where large pieces of wood, 2 by 4's have fallen off the houses, the walls and have all collected in the yards.

Xenia 2  
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Photo 49 is taken of ?

The houses are relatively small and of moderate quality. ? →



General observations of the documentation of April 6, afternoon when we did work on foot, We covered the area from approximately 35 bypass on the southwest where the tornado entered the city to intersection of ? and West 2nd street covers the downtown. Most of this area is heavily damaged large number of residences on the streets are heavily damaged, We have the damage which many corporations have given to us and the city and is ~~xxxxxx~~ plotted at lines on the map. There is a large amount of open area also in this vicinity. had the trees, fairly short about 25 to 30 ft trees and a lot of the limbs of the trees have been broken and spread all around . The residences of the area are of middle to lower income . Some of them were rather weak and small and they are all very heavily damaged. The school, Arrowhead Elem School, was superficially but heavily damaged the material. The Warner Jr. High School was heavily damaged only in the area of the gymnasium. The rest of the building sustained some water damage, some glass broken but there is no other structural damage in terms of collapsed walls or collapse of any columns or in general, collapse of structure. Only in the gymnasium area, the walls, east and west walls have collapsed and one of the arches has collapsed as documented previously. There is another school <sup>n</sup> in this area, Simon Kenton Elem. School, that we have not documented closely. and if we get a chance after finishing other areas , we will try to go into this area again. On April 7, Sunday what we planned to do is go into the northeast section of ~~xxx~~ town where the damage has occurred and cover four schools in that area which are in the path of the ~~tornado~~ tornado. as well as try to cover the downtown section and look for any major items or missiles that we may be able to locate.

Documentation on April 7, Sunday X-50 is of the (Scott) Elem School south which shows the ~~xxxx~~ light standard of the stadium in the background. The damage on the north face of the Elem. school is restricted to one slashed ?



window. There is no apparent<sup>or</sup> any other damage to the school. ?

xxx with a long hallway between the classrooms and ?

The location of the school is on the northwest part or the western part of the tornado edge of the tornado.

Photo 51 shows the south side of the Scoot ? Cox? <sup>Elem?</sup> where one of the door ~~xxx~~ blocks was broken and on the ~~w~~ east side some three window panes were broken but other than<sup>~</sup> that there is no damage to this elementary school including the on the elementary or the second story looking in the background sustained no damage. The damage to the light standard ~~had~~ has occurred due to failure of the footing and the light standard is ~~leaning~~<sup>leaning</sup> towards south/southeast about 20 to 25 degrees from the south. The light standard or the structure of the light standard has not ~~seem~~<sup>ed</sup> to have sustained any damage. The this is strictly due overturning footing seems to trying to overturn .

Photo 52 is of overturning of the footing. The picture is taken looking east /southeast.

Photo 53 is of the overturned footing looking into the area where the concrete is trying to pull out.

Photo 54 is of the footing trying to pull out also, showing the corner which ~~x~~ is trying to go down and the corner which is trying to come up.

Photo 55 is of a light standard looking towards the west

?

light standard base of the main structure is fixed to the concrete footing at each angle are the base plates and two bolts and the bolts are exactly 1 and 3/4 inch. The base plate is 8 in. by 8 and 1/2 by 14 in long and it is 1 and 1/4 in. thick.



Photo 56 is of the light standard which has been partially uprooted. Picture is taken looking south and the standard is leaning towards the east.

Actually the standard is leaning even more towards the south.

Photo 57 is taken of the light standard at the stadium which shows the tilt in the direction of the south

Photo 58 is taken of the light standard located directly east of the stadium and from where we are standing

The x traffic ? area is approximately 300 ft to 400 ft east of the stadium light standard.

Photo 59 is of the Khroeler Furniture Co. looking southeast. The Kroeler Furniture Co. is located at the corner of northern Ellis ? and US 35. The bowling alley is located on the southwest corner of the intersection.

Photo 59 shows the damage that <sup>occurred</sup> ~~occurred~~ to the Kroeler Furn. Co. and the ~~xx~~ crumbled truck trailers.

Photo 60 is taken of the Kroeler Furn. Co. and the bowling alley. It shows the western part of the Furn. Co. and part of the roof of bowling alley where one of the trailer trucks is ~~lying~~ <sup>is</sup> lying on the roof. The picture ~~is~~ <sup>is</sup> taken looking south.

Photo 61 is taken of Kroeler Furn. Co. and the bowling alley looking south and is taken with a wide angle lense.

Photo 62 is taken of the Kroeler Furn. Warehouse looking towards the southwest. It shows the damage to the Kroeler Furn. where part of the 7th floor roof has collapsed. and also shows on the left of the picture one of the trailer trucks that had toppled over onto another trailer truck.

Photo 63 is of ~~the~~ one of the toppled trailer trucks at the Kroeler Furn. Co. The trailer truck was located at the southeast corner of the intersection . The trailer truck was two axles in the rear



wheel are 40 ft long. Their total height is 12 ft 6 in. and their trailer height is marked on it as 18. They have a number 12120. and they are primarily from the furniture ~~Store~~.

Photo 64 is of the trailer truck showing the ~~max~~ height, and the width and the length dimensions of the truck. This part of the trailer is 40 ft long and it has a double axle in the rear. Now the area of the furniture shop also had some other trailer trucks which apparently were only 30 ft long and one of them has ~~also~~ also toppled.

Photo 65 is of the trailer truck which is 30 ft long and with a single axle in the rear has toppled.

Photo 66 is of the Kroeler Furn. showing the northeast corner of the store. It was a two story structure and part of the 2nd story is gone. It is an old structure. It has a 3 ft. thickness ~~max~~ walls with two beams resting on the walls and a joist? two of them combined together

Photo 68 is of the middle of the side approximately 8 by 12 and close to 20 ft long ~~xxxx~~ --a piece of wooden beam which apparently entered from the top of the truck falling vertically ~~ally~~ downward and coming through at the bottom.

Photo 69 is of same piece of timber 8 by 12 in. by 20 ft long.

Photo 70 is of the crunched up trucks with the middle truck having a missile penetrating through. These trucks are located on the west side of the Kroeler Furn. Store.

Photo 71 shows a piece of 1 by 8 penetrating through a toppled, partially toppled trailer truck. It is also located on the west side of the Kroeler Furn. Co.



Photo 72 and 73 are of the west side of the Kroeler Furn. Co. showing the area from which allegedly, the trailer trucks flew and landed on the bowling alley. The picture also shows the bunched up trucks on the left side in the vacant area as well as ~~xxx~~ the fallen roof of the furniture company. The structure to go in and hence we are not able to enter the structure and obtain any more details. However the Kroeler Furniture Co.

the wall on the left side where load bearing and the 2nd story walls have collapsed

Photo 74 shows part of one of the trailers that is lying a portion of it partially on the bowling alley floor, ~~xxxxxx~~ bowling alley roof where the roof has collapsed and it also shows <sup>in</sup> the background the area of Kroeler Furn. Co. from which apparently the trailers had come. The bowling alley structure ~~is~~ steel columns with steel beams-on top of the steel beams apparently there were wooden joists 1 by 10 located approximately 12 to 14 ft apart and on top of it there is a 1 inch thick ~~wooded~~ wooden . This structure ~~is~~ seems to reasonably well engineered. There is no indication that the roof was supported, take it back---- there is some indication that the steel beams at the end or at least some steel beams were supported on load bearing wall 4 inch concrete block, with 4 in. thick brick <sup>vener</sup> ~~vener~~ (exterior). It is conceivable that the impact of the trailer truck could have collapsed the southern part of the roof. Most of the debris here seems to be outward with lots of blocks and bricks lying around just outside the structure. There is no verticle reinforcement in this area. This south wall of the bowling alley is the end at which they had the pins and pin machines ~~and~~ are visible from the outside.

Picture 75 shows the end of a steel beam



which is hanging over the bowling pin machines. indicating that is was very lightly load bearing on the ---it was bearing on the load bearing wall.

Photo 76 shows the roofing structure of the bowling alley where there is a steel column with beams on top of it and the column has bent in one direction.

Photo 77 is of the west wall of the bowling alley which shows the conception and the structural system of the alley. The brick and tile walls <sup>are</sup> ~~is~~ load bearing at the end and the steel beams are supported on the walls and on five columns in the center. The ~~style~~ ~~are~~ tiles are 4 inches hollow tiles the bricks are 4 inches brick <sup>veneer</sup> ~~veneer~~ --the ~~xx~~ steel beams were sitting on pilasters approximately 12 by 16 inches. There is no sign of any verticle reinforcement in the wall . This west wall of the bowling alley has collapsed inward or towards the east while the south wall of the bowling alley has collapsed outward or southwest.

Photo 78 shows the west wall and the two trucks on the bowling alley. One is on the roof and the other is partially on the roof and the total roof has collapsed on the outside.

Photo 79 shows the truck that is on the roof-just to the left of the truck there is a hole in the roof and one of the steel from its column support as well as there is another hole just to the right of the truck. These two holes may have been caused because of the trucks.

Photo 80 shows the hole in the roof just to the left of the truck that is on the roof. At this point one of the steel beams, one of the main girders, has been broken from its support.and it can be seen in the picture.

Photo 81 and 82 are of the <sup>two beams?</sup> in the middle of the bowling alley . <sup>e. two beams are</sup> ~~This building is~~ supported on five columns, the five columns have a plate on the top



approximately 6in by 6in by 1/2 in., The steel beams are centrally supported with two connecting the bottom plank to the top plate on the pipe. The failure of this beam is by of the beam planks towards the end and the bolt or the bearing of the bolt totally taking the end of the beam plank. The bottom plank as seen in the picture has bent upward and where the has taken place could be seen as well as slightly upward bending of the plate of the bottom plank can be seen in the downward bending of the top plate can be seen. ? There is one other possibility that this beam was perhaps not but they may have put the bolt allowing for the expansion joint. and have a ~~sk~~ hold.

Photo 83 is of the truck on top of the roof seen from inside the bowling alley through the hole. On the photo 82 and 83 the bolt must have sheared through because they are not in the base of the plate in the column and they are not in the bottom plank of the beam. The area around the steel beam with hanging wooden planks, the truck leaning into it and the beam being collapsed is too dangerous to be in this building sector. ?

Within the bowling alley is considerable amount of roofing

2/3 of a thirty ft. roof of the roofing is totally open to the sky in that area. The hole in the roof of the bowling alley seems to indicate very strongly as well as the verticle breaking of the steel beams, with the plates planks ? hanging where ~~they~~ they are and the bending of the planks seems to indicate that the trailer truck definitely impacted on the roof. However, <sup>whether</sup> one trailer truck impacted or more than one could not be determined, but very likely the trailer truck traveling approximately 160 ft did impact on the bowling alley roof. Data on three trailer trucks that ended up at the bowling alley are as follows: the one which is lying partially on the roof is 35 ft in length the number on it is 99, it has double axle at the rear, one of the front



supporting axles which generally does not have a wheel ~~is~~ broken. Had at least one chair inside when it toppled or traveled and it has one number printed on it-25. Correction: 2599. The trailer truck that is lying on the ~~roof~~ <sup>roof</sup> has number T-836. It seems to be of the same size and ~~xxx~~ dimension as the other truck on the ground. The trailer that is lying on the ground --its basic data is as follows: the height of the trailer part of the truck is 9 ft 2 in. The number on this trailer is T-837. It has a double axle in the rear and it has an Ohio license plate 1944 664B13. Its width is 8 and 1/2 ft. measured. and its length should be 35 ft. The length of trailer truck is 40 ft. measured. Photo 84 is looking towards the damaged area of downtown, looking northeast

Photo 85 is of the bar joist that was found on the side of U. S. 35.

It is a roof joist slightly bent and was thrown from one of the commercial establishments. Its dimensions are 20 in. high, the bottom angles are 3 by 3 by 1/4 in. 1/8 in) and the end angles are 1 in by 1 in. by 1/16 in. and a 1 inch diameter bar. The bar joist is 25 ft. long. This bar joist apparently came here but we have been unable to establish its origin and we will try to do that. With regard to the bar joist, we have checked all establishments ~~From~~ From the location of the bar joist we have been unable to determine where the bar joist could have come from.

Photo 86 is taken of Warehouse which is the structural element of this our preengineered metal building with a frame white approximately 120 ft. This building is located directly south of the Cox elem. school and stadium and west of the bowling alley. The structure failed due to winds coming from the west and end frame wall has been pushed inward with the ~~bruxings~~ ? within the first interior frame and exterior frame buckling which are readily visible in the photo.



Photo 87 and 88 are the closeups of the structure. There is no other damage visible on this structure.

Photo 89 is of the old ~~xx~~ church building. ~~It is an old building~~ It is a brick building located at the corner of Monroe and Church St. It is located at the southeast corner of the intersection almost at the edge of the tornado damage on the right side looking northward/looking northeast.

Photo 90 is of the Jr High School located at the northwest corner of Church St. and Blvd. The flag pole in front of the Jr. high school is bent ~~toward north~~ toward north. Some of the utility poles and the stop signs in this area have also been bent toward northeast,

northwest. The flag pole is bent due north. Photo 90 is taken from the grounds looking at the roof of Central Jr. High School where the concrete roof has been broken or has a hole. The concrete roof has support (?) of approximately 12 beams 8 inches wide with two reinforcing bars and the joists are placed at about 2 and 1/2 ft with a slab of 2 and 1/2 to 3 inches. Something apparently has fallen on top of it to create this type of failure in the concrete roof.

91?

Photo 91 is of the windows on the southside of the building showing the window ~~xx~~ damage on the first or the ground floor, it can also be called the basement. It is approximately 2 and 1/2

The first floor and the second (seventh)?

Photo 92 is of the , showing the hole in the roof and the windows broken on the floor below that. This would be the first floor and the seventh floor. The window on the seventh floor is totally gone.

Photo 93 is of the front of the school where just about to name (?) some of the and the

damage to the windows of the high school. Out of the . All of them have sustained some damage



with about half of them sustaining major damage. In other words more than 60% of the windows broken and 3 windows are totally demolished.

Photo 94 and 95 are the panaramic view of the south side of the Central Jr. High School. First one is taken looking n0rtheast and the second one is taken looking northwest. In front of the Jr. High School there is a fair amount of debris and just to the west of it there are two trees. One of them is totally overturned, uprooted from the ground and the other one has lost a large number of leaves. The utility pole to the left of the Jr. high school isleaning in the north direction.

Photo 96 is of the on top of the front entrance of the Jr. high school. has been broken and some pieces of it have fallen down on the ground

is approximately 18 to 20 ft above the ground.

Photo 97 is of the coping that has fallen down

Jr. high school from the balcony above the front entrance. The flag pole has a total heighth of approximately 60 ft. It is made up of 6 sections. The ~~xxx~~ bottom section ~~xxx~~ is 10 ft high, the next section is 15 ft, the third section is 15, fourth section is 10 ft. , fifth section is 5 ft. and the 6th section is 5 ft.with a ~~x~~ spear on the top. These dimensions are approximately. The only correct dimensions that we know of the flag pole are 5 and one/half in. outside diameter at the base. The flag pole is fixed at the slices by sliding one pipe into ~~xxx~~ another with 2 or 3 bolts spaced at 6 inches apart. Thus it may be possible to determine changing slices of pipe as the pole goes up in six sections.

Photo 98 is of the first section of the flag pole.

Photo 99 is of the flag pole ~~x~~ in front of the Jr. high school.

Photo 100 is of the third floor from the ground. You are looking at a eastern face or eastern side of the wall.where the window in the southeast



corner is totally gone. Window glass, quite a bit of it, is inside, but it is not possible to determine whether some of it went out or not. But because of the loss of the window there is a large amount of filling, *(ceiling?)*

*False ceiling →* filling seems to have been lost. Quite a bit of it has fallen on the floor. The roof joist of the ceiling are in the here.

There is one photo between 100 and 101 which is taken of a ~~high~~ side building of the school primarily to show the coping, architectural coping of the school. how it has flopped over, some on the roof and some on the ground.

The parapet seems to have been damaged ~~not~~ quite a bit. This particular damage is on the south side of the building and this building is on the east of the main building of the Jr. high school.

Photo 101 has been clipped because we took the picture of the outside of the building without a ~~number~~.number.

Photo 102 shows from the second floor of the Jr. high school looking south where the windows are ~~broken~~ broken considerably because of the roof gravel and the roof gravel could have come from the low 1 story and 2 story building ~~building~~ here located directly south of the structure. The alliance here roof can be seen in the background. There still seems to be some gravel on (?) alliance here roof but it is not possible to determine ~~from~~ from here of any collapsing in any given area. However, there is no question from the sample of the roof gravel that it came from the gravel taken from the classroom that it ~~was~~ came from the roof.

Photo 103 shows the debris of the building that fell in -- of the debris of the roof that fell in. In this debris a large ~~number~~ number of coping material that must have come from the roof is visible.

Photo 104 shows the window and the debris that came from the ceiling when the ceiling came down.



Photo 105 ~~xxxx~~ shows through the hole the exterior wall where the joist would be resting. Some of the broken joist which must have sheared off or the bearing failure on the brick bearing wall can be seen.

Photo 106 shows the pot marks in the window which leaves little doubt that there was a lot roof gravel that came in through the windows.

Photo 108 shows the place where the joist were broken . These are concrete joists of the roof and because of the heavy load coming on the floor slab of the roof where the joist seem to have broken.

Photo 109 shows the broken windows, the pock marks, and the lines here in the background. This is looking south from the second floor in the classroom.

Photo 110 is ~~xxxx~~ showing the debris in the hallway of the second story which are hollow tile blocks. These hollow tile blocks are apparently were used for the upper part of the library which is above the suspended ceiling of the hallway and there was a wall there. The wall seems to have toppled and fallen on the suspended ~~xxx~~ ceiling which is not able to ~~x~~ sustain the ~~xxx~~ weight of it and has created a small hole approximately 3 ft by 5 ft and depositing 8 to 10 concrete blocks on the hallway floor. This is one of the things that we may have to consider in the future with regard to hallways. ~~xxxx~~ That the roof of the hallway has to be sturdy enough to sustain the weight of a block wall or ~~xx~~ whatever else may be on top.

Photo 112 is of the skylight on the north side in one of the rooms where the skylight is gone apparently picked up and part of the false ceiling, part of the roof ceiling has come down.

Photo 113 shows the concrete joist system where the joist are resting on the load bearing walls.

Photo 114 shows the hallway on the second floor where there is some debris



in it. However, in general the hallway is pretty clean. The only places we found major debris that could be dangerous to persons taking shelter is in front of the library where the block wall has collapsed on the false ceiling and came through the wall, came through the ceiling.

Photo 115 is looking through the hole where the roof has fallen in. This picture shows where the ~~xxxx~~ coping is missing on a transverse wall as well as part of the parapet from the front must have fallen inward on the roof to add to the loading of the roof.

Photo 116 shows some of the coping material that has come through the fallen roof. It is not possible to determine the amount of coping or the amount of parapet material that may have fallen on the ceiling.

However, it may be possible to guess ~~to~~ to some extent. The coping is generally about anywhere from 6 to 8 inches thick and about a foot wide.

Photo 117 shows one of the classrooms on the first floor or one floor above the ground where the windows have been broken and the Venetian blinds have been torn apart and there is a large amount of debris in the classroom of broken glass gravel, and some roofing material. There is also one piece of one by or piece of wood 1/2 in. by 5 inches approximately 3 ft long lying in there. However, in general this room has sustained very little damage except the windows and water wastes on the floor.

We have picked up some of the gravel sample and the roofing material sample from this floor as well as some of the pieces of ~~xxx~~ glass.

One of the things ~~that was worth~~ worthwhile noting is even though the outside windows have broken and pieces of wood have blown in, none of the door glass of the classroom have been broken and none of the debris have entered the hallway. "I'm putting in a new tape."



3A →

Photo 118 shows the door of the classroom leading to the hallway and there is no damage whatsoever to the door and yet considerable amount of debris has entered the classroom. Pieces of wood about 8 or 10 inches long, 1/4 in. thick have gone all the way to the door. Other pieces of wood about 1 ft long, 1 in. by 2 in. have entered about 1/2 way, 10 to 12 ft from the window and large pieces of wood 1 by 4 inches have entered the windows of the classroom and they have gone about 3 to 4 ft from the window.

Photo 119 shows pieces of wood 1 by 4 in by 3 ft long which have entered the one floor above the ground floor which could be considered about 1 and 1/2 story high window and has gone 4 to 50-ft. from the window.

Photo 120 shows a piece of wood that came in through the window about 1 by 1 ft long which came 10 ft into the classroom from the window.

As the window gets larger from the window the debris seems to get smaller and of a lesser ~~xxxx~~ amount.

Photo 121 is of the same piece of wood taken with a flashlight.

Photo 123 shows a <sup>+24</sup> ~~gx~~ major size missile coming from the roof across the street approximately 120 ft away. The portion of the roof from the house which is seen in the background must come flying through the window taking down the whole window frame here in the first floor from the ground or 1 and 1/2 stories high approximately 15 ft above the ground in the classroom and the size of the roof is approximately 40 sq. ft. The roof is made of 1 by 8 material nailed to small joists or small pieces of 2 by 4 and it ~~axa~~ also has perhaps brought with it a piece of 2 by 8 approximately 12 ft long. There is a tremendous amount of debris and mess in the classroom because of this missile flying in and it indicates the magnitude of the wind borne missile and the wind forces that may have brought this size of ~~roof~~ roof into this structure. However, even though the roof came through the window it went approximately 12 to 13 ft into the classroom and stopped essentially



before hitting the interior wall which is approximately 20 ft away and has not damaged the door or the door window at all and the glass is not broken as it can be seen in picture 124.

Photo 125 shows the hallway of the one floor above the ground where the large missile was found in the classroom. This hallway has apparently very little debris. It does have a few pieces of glass and a little bit of roofing material. However none of the debris seems to large enough to be able to ~~xxxx~~ injure or hurt any individual who may be taking shelter in this area.

Photo 126 is of the south wall of the Jr. High where on the brick there is a large amount of roofing tar stuck. This roofing tar may have come from one of the buildings on the south side of the Jr. high. The roofing tar is 12 by        and approxiamtely 30 ft long. Some of the roofing tar is the size of about 2 or 3 sq. ft. and it must have come on the wall. Additional observation regarding the Jr. high school:

It is an old large school which has three floors. The ~~xx~~ ground floor is sort of a half basement. The first floor is 1/2 floor up and the second floor is above that. By and large the floor heighth are higher or larger than normal and may be as much as ~~kx~~ 13 to 15 ft. The school has classrooms on the south side and hallways running east and west just north of the classrooms. On the north side the school has some classrooms, some laboratories, an auditorium and it has got something like a double T with the flinch of the T on the south side. However the double T is a very short double T. The winds in this area came from the south without any doubt because of the roof gravel , the roofing from the house and the utility pole and the flag pole. Everything has gone towards the north direction. The south side of the building is heavily damaged from the ~~point~~ point of view of all the windows, the glass is broken, the coping cast is broken above the front entrance and on the top parapet area and the classrooms



are littered with debris and missiles. The hallways have sustained very little damage on the ground floor which is in part basement area .on the first floor and on the second floor. The only place the hallway ~~x~~ has sustained any damage is on the second floor where the the library area had a higher wall above the ceiling, false ceiling or the acoustic ceiling of the hallway and the block wall toppled towards the north, in other words, on top of the hallway which penetrated the acoustic ceiling of an area about 3 ft by 5 ft in one place and some blocks have come through. In addition other blocks are lying ~~a~~ on the acoustice ceiling on the second floor which is a little bit of a dangerous situation right now. The damage on the south side of the building ~~is~~ is minimum except for the top floor on the south northeast where the skylight was gone but the other part of the building where there was an ~~auditorium~~ auditorium and other classrooms and laboratories, the damage is virtually zero. The only damage ~~xxx~~ visible was on the second floor or the top story. Some of the roof gravel must have penetrated the glass window, some of the windows which were facing east and west and have broken the windows. However, we did not find any broken windows in the center part of the structure in the leg area of the T on the first and the basement area. After looking at the junior high we took a walk around the senior high school. The senior high school is declare unsafe at this time and hence has been corded off and nobody is allowed in the structure. From what we could see, the center part of the building had three storées and the top story has collapsed. Most of the roofing is gone. On the north end where there was a cafeteria and it was only one story, the roof made of double T prestressed beam has collapsed directly downward. We were not able to ascertain whether the double T's were supported on beam and column system or whether they were supported on load bearing walls system. In the other part of the structures, there are prestressed beams supported on



pre-cast beams and on columns which have sustained relatively no damage. On the southwest corner of the building there was a gymnasium area with a steel roof joist which has totally collapsed. We intend to take some photographs of the outside of the structure tomorrow morning which would be Monday morning April 8.

From what we could ascertain walking around the structure, the hallways in the central part of the ~~brick~~ buildings on the first floor as well as on the second floor seem to have sustained themselves and there should be no damage. However we have not found anybody yet who has actually gone inside the hallways to see what kind of debris there may have been. We will have to ascertain some of these things later on by either contacting some of the design engineers ~~or~~ or the city engineers. We may try to do some of that tomorrow depending on the time available. This is the end of the documentation of April 7th.

April 8th----Monday      Documentation of Xenia

It is raining continuously and relatively hard to go out and document any of the buildings. So most of the photographs taken now are from the ~~in~~ cars. Hence the numbers are not used but the photographs are taken in sequence. We will be able to note which one was taken at what time.

The next photo is taken of the physical education building just south of the high school. The photo is taken of south side of the building looking north. It shows the top roof portion of the building is fairly heavily damaged. Most of the roofing and corrugated panels--they are ~~probably~~ ~~probably~~ probably glass panels are gone ~~from~~ from the building.

The next photo is also of the south side looking at southwest corner of the building.

Next picture is taken from the west side of the physical ed. building and it is of the southwest corner and the next one of the southside of the building. The building seems to have sustained relatively little



damage to its main structure and the main structure components except on the roofing and the skylight type of panels which are actually vertical panels near the roof. They are all broken. There is a reasonable amount of debris in the yard of the building particularly in terms of pieces of wood which probably would have struck the panels and broken them.

Next picture is of the northeast corner of the physical ed. building where some of the brick veneer on the top part has come off. This top part is set back from the outline of the building.

The next picture is of the building which has a roof collapsed as well as the masonry block wall and it has it is a building just to the east on the north side or northeast of the physical ed. building. The north wall has collapsed outward and the southeast corner of the wall must have also collapsed because the total roof has settled down. ~~This~~ This building is a load bearing masonry block walls--does not seem to have been reinforced except perhaps the barn beam on the top and the wooden trusses.

Next picture is of the southeast corner of the building--physical ed. building showing the roof damage.

next picture of the southeast corner of the physical ed. building taken with a telephoto lense showing the inside steel members of the roof which seem to have sustained no damage.

Next, is of the senior high school--the southwest corner of the structure.

The next picture, shows the gymnasium area on the southwest corner and the next picture shows the west side of the senior high school. This senior high a seems to have a gym area of with the roof structure of steel joists bearing on the load bearing walls. The load bearing walls are made of concrete block with brick veneer on the outside. the load bearing wall seems to have collapsed , collapsing the whole roof structure. The structure is declared unsafe and hence it is not possible to enter.

The central part of the structure is a two story structure where the roof



has fallen down. This roof seems to be of steel bar joists , ~~so~~ fairly small steel bar joists and they have fallen on top of the second floor slab or on top of the first story. All the windows of the school are broken. The central part of the structure is essentially steel pipe columns with ~~x~~ steel beams on top and the windows and all the windows are broken. The steel joist which is resting on the steel beam have also fallen. The outside of the structure has got classrooms and the hallway should be running north/south between the classrooms. This hallway seems to have sustained little damage tho it is not possible to go inside and ascertain the amount of damage it would have sustained.

Next picture is taken with a wide angle of the west side of the school showing the damage ~~at~~ to the first story where the glass is broken and the second story where the roof is completely gone.

The next two pictures are of steel joist on the second story showing the type of ~~x~~ roof structure that was employed in this particular case.

Next picture is showing the roof joist of the gym area located in the south west corner. The picture is taken ~~xxxx~~ looking southeast from the ~~xxx~~ west side of the school.

The next picture was taken from the west side of the school looking east. This area was single story with light steel joists and they have collapsed directly downward. The/ Some of the joists taken off either from the roof of the second story or from other areas can be seen in the foreground ~~xxxxxx~~ lying on the ground.

Next picture was taken of the northeast corner of the school where a small room seems to be intact but the cafeteria area ~~seems to be~~ which was one story ~~high~~ high with double T prestressed concrete beams have collapsed directly down. It is not possible to ascertain the type of frame system that was used. It could be one of the two: either precast columns and girder or it would be load bearing masonry walls.



Next picture shows the north side of the school where the two story ~~st~~ structure even tho it has ~~lost~~ all the walls, is structually, seems to be structually sound while the one-story structure of the cafeteria has ~~xxxxxx~~ collapsed. The time on the clock in the cafeteria is 20 min. to 5.

Next two pictures are taken with a wide angle lense of the north side of the school. The north east corner area where there are two ~~xxxx~~ stories, there does not seem to be any struc~~tural~~tural damage . The structural system seems to be concrete columns with concrete L shaped girders and pre-stressed concrete double T beams. The northeast corner not quite the corner but the north part where there is a cafeteria the double T beams have collapsed directly downward. The next picture is taken with a telephoto lense and is of the north side of the building showing the ends of the pre-stressed beams which have collapsed and perhaps the bearing area in the rear.

The next picture is also showing the pre-stressed beam, the clock in the background of the cafeteria area.

The next picture is of the south wall of the cafeteria area where ~~perhaps~~ perhaps the prestressed beams were~~n~~ set in. The next three pictures show the structural system of the north and east part of the high school where the pre-cast or concrete columns with pre-cast L-shaped girders and double T pre stressed beams sitting on them. The details of the connections are shown in the pictures. There is some indication of the north side of prestressed concrete beams of the cafeteria have collapsed. There may have been a bearing failure. Next three pictures are the close-up of the ends of the pre-stressed concrete girders which have collapsed and it is trying to show the bearing failure that may have triggered the collapse or the ends may have chipped off when the beams collapsed.

Next two pictures shows the entrance at the north end of the building where considerable amount of debris has collected. There are two double doors at the entrance. This hallway is running north and east



between the two parts of the building. The glass in both outside doors is broken and 1 glass of the inside door is broken.

Photo 127 is of the inside of the high school showing the hallway. This particular hallway is in the two story structure part and it is running east/west. The debris is relatively very little --a few suspended acoustic ceiling. The hallway which is running north and south has got two or three corrugated sheet metal and one large vacuum cleaner that is normally used for the school. This hallway has got classrooms and structures all around it.

Photo 128 is of the hallway where a piece of sheet metal has entered. This piece of sheet metal is may have entered from well, it is not possible to determine where this piece of sheet metal would have entered from. but would have come through one of the entrances. It is approximately 25 ft from the entrance on the north side. However the glass of the north side is not totally broken. There is possible they could have entered from one of the classroom windows because the windows are broken and then come through the doors--the doors are broken. However, we don't know whether the doors were open at the time of the tornado. The hallway this is a first floor hallway has approximately two inches of water and still water coming in because the second story roof has fallen in and hence the rain comes on the top on the roof the first story that being not water proof, the water is <sup>percolating</sup> perforating through.

The structural system of the

38 ← Next three pictures taken at the high school inside are of a room about 25 ft by 30 ft with the beams were standing 25 ft direction located at the southeast corner of the school where the beams have collapsed down. The collapse seems to have occurred because of some debris falling on the beams. These are precast, double T beams joist with approximately



12 inches depth. One picture is taken ~~xxx~~ showing the debris inside and the beams. The second picture showing ~~xx~~ the beams and the third picture showing the ends of the beams.

Next two pictures are of the second story of the high school ~~x~~ where the pre-cast beams have been placed on L girder and as precast joist and they have not been uplifted from this position. This area <sup>is</sup> just above and to the east of where the precast joists have collapsed directly down into the room. The utility pole just to the south of the structure southeast of the structure, seems to have been - Correction on the utility poles..... The utility poles which are directly east of the high school have bent towards the ~~xxx~~ northeast. The corner that we have been talking about is actually northwest corner of the building. The corner of the building was the northeast corner of the building.

We may have to totally reorient ourselves regarding this building.

With regard to direction and orientation of the rooms and the cafeteria and so on, we may have it wrong in our write up but we do have it correct off the firedrill instruction sheet that we picked ~~p~~ up from the metal shop and we will be able to judge from there regarding the direction of the hallways and so on.

Next five pictures are of the one story structure which is an addition to the high school which is not shown on the firedrill sheet. The construction of this area is one story load bearing walls with pre-cast core --hollow core slabs spanning approximately 25 ft. This addition is on the east side of the building and we are looking at the east face of the structure. The hollow core slabs over the entrance have been picked up. One is thrown on the ground and one is picked up, turned up over the roof. There are three edge pieces have <sup>been</sup> picked up and demolished. ~~In~~ one of the end classrooms near the corner where the edge slab is still in place but the one next to it has been picked up and is lying on the ground.



This can be seen in one of the photographs. The utility poles in this area are leaning towards east/northeast.

Next two pictures are of Shawnee Elem. school. We are parked on east Hairbind st. facing east and the pictures are taken on the back part of Shawnee or the north face of the school. There is relatively little damage to the school. Some debris has collected on the north side of the school and some roofing has been peeled off but the damage can be considered somewhere between light and moderate. The southwest corner of the school seems to have some roofing peeled however there is no other damage, major damage. One picture taken of the southwest corner of the school.

West side of the roof and the flashing build of Shawnee Elem. school shown on the next picture. On the previous picture it was the east side of the school that we had taken the photograph of.

Next photo is of the south wall of the school and as can be seen there is hardly any damage. The hallways of the school are in the center along the two rings with the classrooms on the outside. Since this school was just outside the damage area perhaps as much as 100 ft away from any damage area. The school has not sustained any damage.

Next several pictures are of 166 <sup>th Infantry</sup> ~~Infantry~~ Building. We (?) are parked on the east side of the building looking at the east face. The wind apparently has blown the wall inward because one of the arch trusses seems to be bent towards the west direction with a couple of bricks stuck on the arch truss. It is a load, it is a brick masonry building with load bearing walls with reasonably good pilasters. There is no sign of reinforcement. The building has approximately 20-25 ft high walls with steel arch trusses spanning approximately 60 to 70 ft and the building is about 100 ft long. There is very little other damage to the building except the roofing. The roof has been peeled off on the south east corner



of the building and on the east side of the building. The building is located at the southwest corner of Detroit Blvd. and Weather St.

Photo 132 is of a stone arch built for architectural purposes as a bridge in a park just south of the school. It has toppled over. It may be possible to determine the ground wind velocity using these arch bridges.

Photo 133 is of the same stone arch which has toppled over. The arch seems to be made of stones with very little grouting between the stones and the grouting is soft, made of limestone. There are two arches like this which have collapsed toward the north.

Photo 134 is of a stone monument located in the park just south side of the high school. This stone ~~mix~~ monument has 12 stones in a pyramid style and they are just place one on top of the other. This particular one has collapsed towards the north while another one located 40 ft from the first, west of the first one has collapsed towards the west. The arches have collapsed towards the east. The stone pyramid which is located, one on the north one on the south, The first one photographed #134 is taken is on the south has collapsed towards the east while the second one has collapsed towards the north.

Photo 135 is taken of the second stone monument. Next five pictures are taken of the Simon-Kenton Elem. school. The five pictures are taken of the east side of the school. The length of the school is running approximately north/south and the hallway seems to be in the middle of the school with a classroom on each side. The northeast corner of the school is very heavily damaged with the external wall collapsing and the roof joists have fallen down exposing the school totally. The school is one story high

Photo 137 is taken of the hallway in the Simon-Kenton Elem school looking south. The hallway runs north/south with a classroom on the east side and the wings are coming on the ~~xx~~ west ~~xx~~ side of the school. with a classroom there.



This hallway is approximately 7 ft wide. Has a load bearing masonry wall with a roof of light steel x joists and the roofing is totally lost in the area. The picture is taken looking south. The time on the clock is 22 min. to five.

Photo 138 shows the hallway where one of the external walls has blown inward. This wall is on the ~~inside~~ west side of the school between the wings and the wall made of 4 in. hollow tile with 4 in. concrete masonry blocks and brick veneer has blown inward creating a tremendous amount of debris certainly injuring anybody who would be in this area. There is no vertical reinforcement in the wall and there is no sign of any pilaster for about 25 ft. The roof joists are still in place. Apparently ~~there is~~ there is a beam, a ~~bond~~ bond beam on the top which has been able to take the load of the roof joist and it has remained in place at both ends.

Photo 139 shows the hole in the wall where the wall has fallen down and one of the classrooms of the wing where the windows have blown inward into the classroom. That particular seem like it is perhaps the library.

Photo 140 is of one of the wings that is coming out. Apparently the school has two wings coming out on the west side.

Photo 141 is of the hallway in one of the wings and this particular hallway has a lot of debris in it even though the hallway seems to be intact. There is a whole piano brought into the hallway which since there is no damage in the doorways, it must have been brought out to protect it from the weather because the ~~hallways~~ classrooms are all torn up. There are a few desks ~~in~~ and chairs in the hallway which were apparently brought in by somebody following the tornado. The walls of the hallway seem to have survived very well except the classrooms have sustained a very large amount of damage. The debris in the classroom is of a tremendous amount.

<sup>142 & 143</sup>  
Photo ~~140 and 141~~ is taken of one of the classrooms in the wings which was facing south and this particular classroom has sustained a large



amount of damage. Most of the roofing is gone. Large amount of debris has come into the classroom and the roof joists have stayed in place. They must have been anchored reasonably well. All the classrooms along this wings in that direction have suffered the same fate, the same type and amount of damage. At the end of the hallway on the southwest corner there are ~~pieces~~ pieces of wood and timber have come. They are , the missiles are anywhere from 8 by 10 near the doorway and the doorway frames are bent to pieces of wood as much as 1 by 4 and about 4 or 5 ft long and approximately 10 ft to 15 ft inside the hallway.

Photo <sup>144</sup>141 is of the end of the hallway on the west side of the wings.

Through the door a lot of debris has entered. In this particular school, there is a considerable more amount of debris that has entered the classroom through the windows. The ~~no~~ windows are all broken.

Photo ~~14~~ 145 is of the fence post, a metal fence post which is a small rail -- the type used in some of the construction which came through the roof and created about 3 in diameter ~~now~~ hole. Fence post was found in the classroom.

Photo 146 is of second hallway in the wing and has classrooms on both sides. This hallway's end also faces the west. The hallway's running east/west. The debris in this hallway was due to the tornado. The ceiling on this particular hallway is load bearing wall with very light weight joists and totally, all the roofing is lost. Also about midway through the hallway a large 3 ft by 3 ft airconditioning, either air conditioning or some sort of fire or exhaust type of equipment is visible. Probably the equipment is not too heavy. Fence post described in the classroom may have been the rail section used in the old part of the school. The old part of the school was constructed with light weight joists across the hallway and the joist on top of the joists were rail sections and the rail sections cast with light weight concrete and then provided with



a false acoustic ceiling underneath it.

#147 is of the hallway. This is an older part of the building. The hallway construction seems to be load bearing block walls with roof joists going across and what seems to be some sort of blocks. Across them is something ~~xxx~~ terrible but in normal between the joists it probably had some raised section with light weight concrete. The ~~set~~ exact construction of this structure is difficult to determine and the structure is too dangerous right now under rain to inspect any closer. Photo 148 shows the debris that has come into the hallway through the door that is opening to the outside. This particular debris has come from a stage area just outside in one of the wings which had a masonry wall and that wall has collapsed. The debris includes blocks and other things are visible in front of the doorway.

The next three pictures are taken at Warner Jr. High ~~where~~ where the back part of it, the other side of the gymnasium area, some of the concrete beams what look like beams have been picked and either blown away or they have collapsed. This particular is the south side of the building.

It will be the west face of the south side of the building. The remaining six pictures are also taken of the south side of the building, from the south side of the building, where the top concrete beams have collapsed. It is difficult to determine exactly whether these beams are pre-stressed or pre-cast and the cause of collapse. The building is not safe to enter at this stage. Some of this information may have to be obtained later on from the building department of the city of Xenia. This is the end of the documentation. HALLELUJAH.....,



STEVE -

THERE ARE LOTS OF BLANKS AND WE PROBABLY  
NEED TO GO OVER THE TAPES AGAIN OR AT LEAST  
TRY - IF YOU NEED SOME HELP LET ME KNOW BECAUSE  
I PEREAD PART OF THIS AND IT IS PRETTY HARD TO  
FIGURE OUT - GOOD LUCK -

KAY

JUST IGNORE THE FANTASTIC TYPING AND ALL THE  
ERRORS - OK? OK!